# *REPORT*
# *SOILS AND FOUNDATION INVESTIGATION*

**PROPOSED D'ANGELO REDEVELOPMENT**
**BOROUGH OF DUMONT, BERGEN COUNTY, NEW JERSEY**
**COREMARK GROUP**

**December 13, 2016**

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**MTA Project No.: 9420-001*1D**

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December 13, 2016

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Attention: Mr. Thomas Tourso

**Report**
**Soils and Foundation Investigation**
**Proposed D'Angelo Redevelopment**
**Borough of Dumont, Bergen County, New Jersey**
**Coremark Group**

## Introduction

This report presents the results of a soils and foundation investigation completed by Melick-Tully and Associates, P.C. (MTA) for the proposed D'Angelo Farms redevelopment which may be constructed in the Borough of Dumont, New Jersey. The site is located east and west of Washington Avenue, to the south of Essex Place, although the subject of this report is the property located west of Washington Avenue. The approximate location of the site is shown on the Site Location Map, Plate 1. This report was prepared in general accordance with our proposal dated November 1, 2016.

## Proposed Construction

A preliminary site plan prepared by Stonefield Engineering & Design dated September 13, 2016 indicates that the development would include five residential buildings and a community clubhouse. Buildings A, B, C, D and the clubhouse would be constructed on the

western side of Washington Avenue and Building E on the eastern side; however, this report is only addressing the larger parcel on the west side of Washington Avenue.

The plan indicates the four residential buildings would be two to three stories in height and occupy plan areas varying from about 13,500 to 27,000 square feet. A 4,500 square foot community clubhouse is shown in the southeast corner of the property. A pool will be constructed to the south of the clubhouse. No grading information has been provided, but we understand the buildings will be slab-on-grade structures without basements. We were informed by Stonefield that the proposed buildings and pavement will be constructed near the existing grades, and that only minor cuts and fills would be required. The interior of the parcel would be predominantly paved automobile parking areas, and we understand that stormwater management would be provided in underground basins below the pavement.

**Purpose and Scope of Work**

The purpose of our services was to:

1) explore the subsurface soil, rock and groundwater conditions within the proposed building, pavement and stormwater management areas in the western parcel;

2) estimate the relevant geotechnical engineering properties of the encountered materials;

3) evaluate the site foundation requirements considering the anticipated structural loads and encountered subsurface conditions;

4) recommend an appropriate type of foundation for support of the proposed structures, and provide geotechnical-related foundation design and installation criteria, including an estimate of the Site Class as defined by the International Building Code 2015, New Jersey Edition, for seismic design purposes;

5) provide recommendations for the support and the need for subdrainage of the ground floor slabs;

6) estimate the post-construction settlements of the recommended floor and foundation systems;

7) provide geotechnical-related parameters for use in pavement design;

8) estimate the seasonal high groundwater levels at the test pit locations based on soil mottling and perform in-place percolation or laboratory tube permeameter permeability testing at the proposed stormwater management areas identified by Stonefield; and

9) discuss appropriate earthwork considerations consistent with the proposed construction and encountered subsurface conditions.

To accomplish these purposes, a subsurface exploration program of supervised 27 test pit excavations was performed. Test Pits 1 through 19 were performed for foundation design purposes. Eight test pits were requested for stormwater design purposes and are identified as Test Pits 101 through 108. The test pits were performed using a track-mounted excavator and extended to depths of about 4 to 13 feet below grade. After the test pits were completed, they were backfilled with the excavated soils which were nominally compacted with the bucket of the excavator.

All field work was performed under the direct technical observation of representatives from MTA. Our representatives located the test pits in the field relative to existing surface features shown on the plans provided to us, maintained continuous logs of the explorations as the work proceeded, and obtained soil samples for identification and testing purposes.

The approximate locations of the test pits are presented on the Plot Plan, Plate 2. Detailed descriptions of the encountered subsurface materials are presented on the Logs of Test Pits, Plates 3A through 3S (TP's 1-19), and Plates 4A through 4H (TP's 101-108). Test Pits 1

through 19 were completed for geotechnical evaluation purposes and were visually classified in general accordance with the Unified Soil Classification System described on Plate 5. Test Pits 101 through 108 were completed for stormwater design purposes and were classified in general accordance with the United States Department of Agriculture (USDA) Soil Classification System shown on Plate 6.

The soil samples obtained from the test pits were brought to our office where they were further examined in our soil mechanics laboratory. Geotechnical testing consisting of mechanical grain-size analyses, moisture content determinations, and tube permeameter permeability tests were performed on select samples. The results of the mechanical grain-size analyses are presented on Plates 7A through 7D, Gradation Curves, and the results of the moisture contents are presented on Plates 7A through 7D as well as the individual exploration logs. Tube permeameter permeability tests were completed on the tube samples obtained from select strata in the test pits and the results are presented on Plate 8. Our field representative performed a field percolation test near Test Pit 107, the results of which are also shown on Plate 8.

The results of our subsurface investigation and laboratory testing programs have provided the basis for our findings and recommendations. The following discussions of our findings and recommendations are subject to the limitations attached as an Appendix to this report.

**Site Conditions**

Surface Features: The site is currently a vacant garden center/nursery. There are existing buildings throughout the property, which appear to be in poor to fair condition. The buildings consist of a one story block garage, a one story frame/block building, and a one story block

building. There are several greenhouse frames within the western portion of the property, which were in poor condition. There is a chain link fence located in the northeast corner of the property, which is shown to surround a manmade pond. The pond did not have any water in it at the time of our investigation. There is another chain-link fence running parallel to Washington Avenue which separates the property from an existing asphalt parking lot. There appears to be a large well present just north of proposed Building A. The remainder of the site consists of asphalt, overgrown areas and debris. There was a stockpile of wood to the east of proposed Building C.

MTA reviewed historic photographs of the site in preparation of this report. Based on the photographs, it appears that until the last several years, the majority of the property was once occupied by either greenhouses or structures. The plans provided to us show the walls of a former building, portions of which appear to be within the limits of proposed Building D.

Based on topography shown on plans provided to us, the site generally slopes down towards the north from the southeast and southwest corners, from elevations of about +112 feet (southwest corner) and +110 feet (southeast corner) to a low of about Elevation +100 feet.

Subsurface Conditions: The following generalized conditions were encountered in the test pits, listed in order of increasing depth:

1) Surface Materials: Test Pits 1 through 3, 10, 11, 15, 104 and 105 encountered about two to four and one-half inches of asphalt at the ground surface. The asphalt was underlain by about two to seven inches of a granular subbase in Test Pits 1 through 3 and 15. Test Pits 4, 6, 8, 13, 103, and 106 through 108 encountered about 8 to 16 inches of topsoil at the ground surface. The topsoil was mixed with a silty sandy fill in Test Pit 103, which is identified as sandy loam on the test pit log. Test Pits 5, 9, 14, 16 through 18, 101 and 102 encountered about one to five inches of gravel at the ground surface. About three to five inches of topsoil was

encountered beneath the gravel in Test Pits 5 and 14, while about one inch of asphalt underlain by six inches of topsoil was encountered beneath the gravel in Test Pit 9, and one inch of asphalt was encountered beneath the gravel in Test Pit 17.

2) Fill: Fill was encountered at the ground surface in Test Pits 7, 12 and 19, and beneath the surficial materials in Test Pits 1 through 3, 10, 16 through 18, 101 and 105. The fill typically consisted of silty sand or clayey silt containing varying amounts of gravel. The fill appeared to contain topsoil, organic material, and various types of debris in several of the test pits. The silty sandy fill is identified as sandy loam in the test pits completed for stormwater design purposes. The sandy fill was estimated to be loose to medium dense in relative density, while the silty fill was estimated to be medium in consistency. The fill generally extended to depths of about six inches to three feet below grade, but was as deep as eight feet in Test Pit 7. The depth of fill should be expected to vary throughout the site.

3) Sand/Silty Sand: The surface materials and/or fill were generally underlain by natural sands containing varying amounts of silt, gravel, cobbles and boulders. The sandy soils are identified as sandy clay loam, sandy loam, loam, loamy sand and sand on the stormwater test pit logs. The sandy soils were estimated to be medium dense to dense in relative density, and extended to the maximum depths explored in the majority of the test pits, with the exception of Test Pits 2, 3, 17 through 19, and 103. Refusal atop cobbles and boulders was encountered in several of the test pits at depths of about nine to twelve feet below grade.

4) Clayey Silt: The sandy soils were underlain by clayey silt in Test Pits 2, 17 through 19, and 103. In addition, thin layer of clayey silt was encountered within the sand stratum in Test Pits 1and 4. The clayey silt was estimated to be stiff to very stiff in consistency, and extended to the maximum depths explored in Test Pit 1, 17 through 19 and 103, and to a depth of abut twelve feet below grade in Test Pit 2.

5) Weathered Sandstone: The natural sands and/or clayey silt were underlain by weathered sandstone bedrock in Test Pits 2, 3, 9 and 10. The excavator was able to excavate about 6 to 18 inches into the bedrock before encountering refusal.

Groundwater was encountered in the majority of the test pits at depths of about six to twelve feet below grade, which typically corresponds to Elevation +92.0 feet to +99.5 feet. In

addition, although groundwater seepage was not observed in Test Pit 11, wet samples were observed at a depth of about 12.5 feet below grade, and it is likely that groundwater would have infiltrated into the test pit had it been left open longer. Groundwater seepage was observed to be light to moderate in intensity. It should be noted that the test pits were completed during a drought in New Jersey, and it is likely that groundwater would be encountered at higher levels if completed during the wet season. In addition, soil mottling, which is likely indicative of perched water, or seasonal high groundwater, was encountered in the test pits at relatively shallow depths. The mottling elevations were typically observed to be around Elevation +100 feet to +106.5 feet. Both the mottling and groundwater elevations tend to slope up towards the east.

**Findings and Recommendations**

General: Based on the results of our investigation, it is our opinion that the proposed buildings may be supported by conventional shallow foundations that derive their support from the undisturbed natural soils or controlled compacted fill installed atop the natural soils. These soils would also provide adequate support for the floor slabs. Removal of topsoil, fill, and any soft or disturbed natural soils would be required from beneath the proposed building limits. It may be possible to leave some of the fill in-place beneath proposed pavement areas provided the fill is free from any deleterious materials, can be compacted to a dense and stable condition, and the Owner is willing to accept a slightly higher risk for greater than normal settlements.

Groundwater was encountered in the test pits at depths of about six to twelve feet below grade, corresponding to Elevations +92.0 feet to +99.5 feet. In addition, soil mottling, which may be indicative of seasonal high groundwater, was encountered several feet above the observed seepage levels. Our representatives indicated that there appears to be a well on-site. It

may be desirable to monitor the groundwater level throughout the wet season to gather additional information regarding the depth to water for stormwater design purposes. In addition, our representative collected tube samples from the various strata at the eight locations requested by Stonefield for stormwater design purposes, and the tube samples were subject to laboratory permeameter permeability tests. One field percolation test was also completed within one of the test pit excavations. The depth to mottling and groundwater seepage, as well as the permeability rates should be taken into account when designing the stormwater facilities.

Further discussions of these and other items considered relevant to the design of the planned development are presented in subsequent sections of this report.

Site Preparation and Earthwork: The existing structures should be demolished, and all above and below-ground structural elements, including the in-place foundations near proposed Building B, the existing well, etc. should be removed. It may be possible to crush the concrete generated during demolition of the existing buildings and to reuse as controlled compacted fill, provided there are no environmental restrictions on their reuse. Following these activities, the existing asphalt and topsoil should be removed from within and up to five feet beyond the building and pavement limits. The topsoil should not be reused as fill or backfill. It may be possible to reuse the asphalt millings as a fill beneath the proposed pavement, if desired. All existing utilities should be located and either be removed or rerouted beyond the limits of the proposed buildings.

Following these activities, excavation should continue as required to the proposed subgrade levels. If any fill is still present at this time, the fill should be removed from within and up to five feet beyond the limits of the proposed buildings. It may be possible to leave the fill in-

place beneath proposed pavement areas provided the fill is free from any deleterious materials, can be compacted to a dense and stable condition, and the Owner is willing to accept a slightly higher risk of greater than normal settlement. The determination of whether the fill can remain below proposed pavements should be made in the field at the time of construction by the geotechnical engineer. Once the fill is removed, the exposed subgrades should be proofrolled using a large vibratory roller. Any areas which cannot be compacted to a dense and stable condition should be overexcavated and backfilled with controlled compacted fill. The natural soils present beneath the fill typically consisted of sands and silty sands and our laboratory testing indicates soils are within to above the range that would allow for adequate compaction. Therefore, some drying of the exposed subgrades could be required, particularly if the earthwork is performed during or immediately following periods of wet or freezing weather. It should be anticipated that some overexcavation could be required.

The excavated soils are expected to consist of silty sandy fill, clayey silt fill, and natural silty sands. The excavated silty sandy soils would typically provide a suitable source for reuse as fill or backfill (provided there are no environmental restrictions on their reuse). However, portions of the sandy soils had in-situ moisture contents that are above the range that would allow for compaction. Therefore, some drying/aeration would likely be required prior to their reuse. Portions of the fill contained topsoil, which should not be reused as fill or backfill. In addition, some of the fill contained debris including glass, metal, brick and wood fragments. Any debris or deleterious materials should be segregated from the fill prior to its reuse. The clayey silt fill encountered in Test Pit 10 and other similar materials generated from site

excavations would provide a poor source as fill or backfill as it is extremely susceptible to slight changes in moisture content and would be difficult to compact to its required density.

If required, imported fill should consist of uncontaminated relatively well-graded granular soils containing less than 15 percent by weight of material passing a U.S. Standard No. 200 sieve and having a maximum particle size of four inches. The fill supplier should provide documentation confirming that the fill is not contaminated.

Controlled compacted fill installed in the building and pavement areas should by spread in horizontal layers on the order of twelve inches or less in loose thickness and uniformly compacted using a large vibratory roller to at least 95 percent of its maximum dry density as determined by the ASTM D-1557 test procedure. Backfill placed in confined areas such as foundation or utility excavations should be spread in thinner layers on the order of eight inches in thickness to the same degree of compaction. All fill should be moisture conditioned as necessary to permit compaction to the required densities.

All excavations should be performed in accordance with the most recent OSHA Excavation Regulations and other governing safety codes. Based on the results of our study, the fill and natural soils would be considered Type "C" soils as defined by the latest OSHA regulations. Sloughing of the excavation sidewalls occurred in the sandy soils in some of the test pits and should be expected during construction, and the slopes flattened as necessary to maintain safe excavations.

Groundwater seepage was encountered in the majority of the test pits at depths of about six to twelve feet below grade, corresponding to Elevation +92.0 feet to +99.5 feet. Seepage rates were observed to be light to moderate in intensity. It should be noted that the test pits were

performed during a prolonged drought in New Jersey. In addition, soil mottling, which may be indicative of seasonal high groundwater was encountered at relatively shallow depths in all of the test pits completed for this study. We have been informed that the proposed buildings and pavement will be constructed near the existing surface grades; however, it is likely that the utilities and stormwater facilities will be constructed at deeper depths. Therefore, dewatering should be included in the construction budget. Further evaluation of dewatering requirements should be determined after grading plans are finalized. We recommend that the construction documents require the contractors to use the equipment they deem necessary to maintain relatively dry excavations at all times and that the site be graded to prevent surface water from accumulating atop exposed subgrades and within excavation trenches.

Foundation Design Criteria: The proposed buildings can be supported by conventional spread foundations that derive their support from the natural soils or controlled compacted fill installed atop the natural soils. Foundations established atop these materials may be designed to impose a maximum allowable net bearing pressure of up to 4,000 pounds per square foot. We recommend that all foundation subgrade soils be observed by a geotechnical engineer from MTA prior to the placement of concrete to confirm that adequate bearing materials are present.

We recommend that all exterior foundations be established at least three feet below the adjacent exterior grades, or deeper if required by the local building code, to provide protection from frost penetration. Interior foundations in permanently heated portions of the buildings may be established at convenient depths beneath the floor slab provided they reach the intended bearing stratum.

We estimate that foundations designed and installed in accordance with our recommendations would experience post-construction settlements of about one-half of one inch, or less.

Floor Slab Design Criteria: Following the previously described site preparation procedures, the floor slabs of the proposed buildings could be supported by the undisturbed natural soils, or controlled compacted fill installed atop the natural soils. We recommend that a minimum four inch thick layer of porous fill or washed gravel be installed beneath the floor slabs to provide a capillary break between the concrete and underlying subgrade soils. The subgrade soils should be compacted to at least 95 percent of their maximum dry density (ASTM D-1557) prior to the installation of the porous fill layer and concrete.

We estimate that post-construction settlements of floor slabs would be less than one-quarter of one inch, assuming the slabs are designed and installed in accordance with our recommendations.

Pavement Design: We recommend that the proposed pavements be designed assuming the existing natural sandy soils and any granular controlled compacted fill would provide a "good" subgrade condition with an estimated California Bearing Ratio (CBR) of approximately ten percent. However, laboratory testing would be required to confirm the actual CBR value. Prior to pavement construction, the exposed subgrades should be recompacted to at least 95 percent of their ASTM D-1557 maximum dry density. Any unstable areas should be excavated and replaced with controlled compacted fill or stone aggregate.

Stormwater Design Criteria: Prior to our investigation, Stonefield provided MTA with a plan showing eight requested test pit locations for stormwater evaluation and testing. The test

pits are identified as Test Pits 101 through 108. Tube samples were obtained from the various strata encountered in these test pits, and laboratory tube permeameter permeability tests were performed. In addition, one field percolation test was performed adjacent to Test Pit 107. Summary tables including the test pit number, depth to mottling and groundwater seepage, and permeability rates are attached as Plate 8. All of these factors should be considered when designing the stormwater facilities.

**Future Work**

Once grading plans are developed and building floors established, MTA should be provided with copies of the plans to either confirm or revise our recommendations.

The following Plates and Appendix are attached and complete this report:

Plate 1 - Site Location Map
Plate 2 - Plot Plan
Plates 3A through 3S - Logs of Test Pits (TPs 1 through 19)
Plates 4A through 4H - Logs of Test Pits (TPs 101 through 108)
Plate 5 - Unified Soil Classification System
Plate 6 - United States Department of Agriculture Classification System
Plates 7A through 7D - Gradation Curves
Plate 8 - Summary of Tube Permeameter Permeability Tests
Appendix - Limitations

Very truly yours,

MELICK-TULLY and ASSOCIATES, P.C.

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Vice President

KAT:TEH/kat
9420-001*1D
(3 copies submitted)


Aerial Photo courtesy of Google Earth Pro

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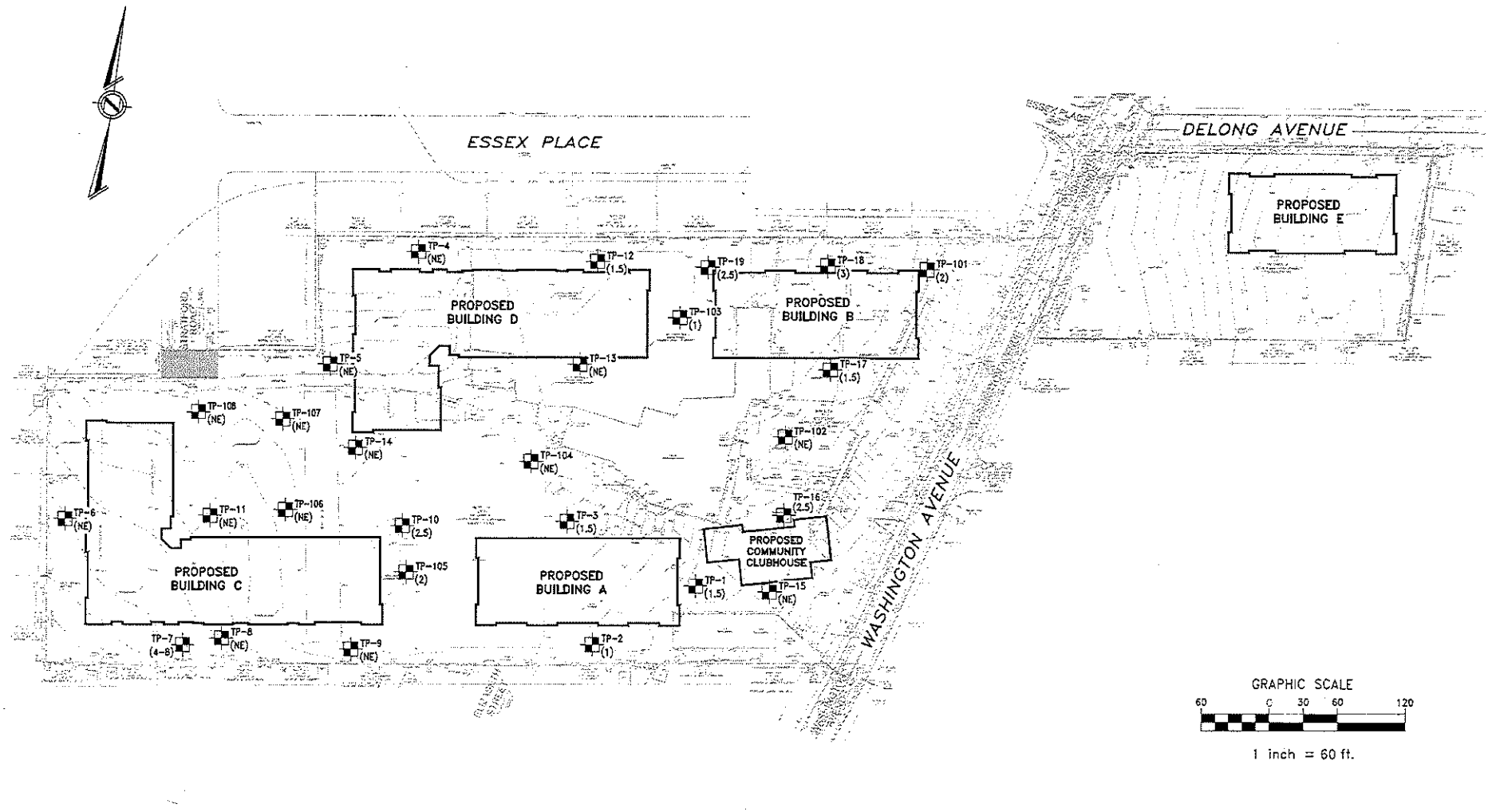
# SITE LOCATION MAP

PROPOSED D'ANGELO REDEVELOPMENT
DUMONT, NEW JERSEY
COREMARK GROUP, LLC

| JOB NO. | FILE NO. | DR. BY | CHK. BY | DATE | SCALE | PLATE |
|---|---|---|---|---|---|---|
| 9420–001*1D | 27308 | VJD | KAT | 12/1/16 | 1"=2,000' | 1 |




GRAPHIC SCALE

60 0 30 60 120

1 inch = 60 ft.

KEY:

TP-1/101 NUMBER AND APPROXIMATE LOCATION OF TEST PITS PERFORMED FOR THIS STUDY

(5) APPROXIMATE DEPTH IN FEET TO BOTTOM OF FILL BELOW THE EXISTING GROUND SURFACE

NOTES:

1. This drawing is part of Melick-Tully and Associates, P.C. Report No. 9420-001*1D and should be read together with the report for complete evaluation.
2. General layout was obtained from a drawing prepared by Gallas Surveying Group, entitled "ALTA/NSPS Land Title Survey (sheets 1 of 2 & 2 of 2)", dated 10/5/15, scale 1"= 20'.

# PLOT PLAN

PROPOSED D'ANGELO REDEVELOPMENT
DUMONT, NEW JERSEY
COREMARK GROUP, LLC

MELICK-TULLY AND ASSOCIATES, P.C.
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| JOB NO. | FILE NO. | | | |
|---|---|---|---|---|
| 9420-001*1D | 27308 | | | |
| DR. BY | CHK. BY | DATE | SCALE | PLATE |
| VJD | KAT | 12/1/16 | 1"=60' | 2 |

# LOG OF TEST PIT

TEST PIT NO. 1

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +108 ft. (±) | WATER LEVEL: 12'

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 2" Asphalt over 7" stone | |
| | | | | Fill: Brown fine to coarse sand, some silt, some fine gravel (moist)(medium dense) | |
| | S1 | 5.9 | SP/SM | Dark red-brown fine to coarse sand, trace silt, little fine gravel, with cobbles (moist)(medium dense) | |
| 5 | S2 | | | - grading (medium dense to dense) | 5 |
| | S3 | | SM | Red-brown fine to medium sand, little silt, little fine to coarse gravel (mottled)(moist)(medium dense) | |
| | S4 | | SP | Dark red-brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (mottled)(moist)(medium dense to dense) | |
| 10 | | | | | 10 |
| | S5 | | ML | Dark red-brown clayey silt, little fine to coarse sand (mottled)(wet)(stiff) | |
| | S6 | | SP | Dark red-brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (mottled)(wet)(medium dense) | |
| | | | | Test pit completed @ 13'<br>Cave-in below 8'<br>Moderate groundwater seepage encountered @ 12' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3A

MELICK-TULLY AND ASSOCIATES, P.C.
Geotechnical Engineers and Environmental Consultants

# LOG OF TEST PIT

TEST PIT NO. 2

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +107.5 ft. (±) | WATER LEVEL: *

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 2" Asphalt over 2" stone | |
| | | | | Fill: 6" Dark brown organic fine sand, some silt (moist)(loose) | |
| | S1 | | SM | Light brown fine to medium sand, some silt, trace fine to coarse gravel (moist)(medium dense) | |
| | S2 | 3.2 | SP/SM | Yellow-brown fine to coarse sand, little silt, some fine to coarse gravel (moist)(dense) | |
| 5 | S3 | | SP | Light red-brown fine to coarse sand, trace silt, some fine to coarse gravel (moist)(dense)<br>- grading with mottling @ 6' | 5 |
| | S4 | | SP/SM | Dark red-brown fine to coarse sand, little silt, and fine to coarse gravel, with cobbles (mottled)(very moist)(dense to very dense) | |
| 10 | S5 | | ML | Dark red-brown silt, and fine to medium sand (mottled)(wet)(very stiff) | 10 |
| | S6 | | | Dark red-brown weathered sandstone | |
| 15 | | | | Test pit completed @ 12.5'<br>*Groundwater seepage not encountered | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3B

MELICK-TULLY AND ASSOCIATES, P.C.
Geotechnical Engineers and Environmental Consultants

# LOG OF TEST PIT

TEST PIT NO. 3

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +105.5 ft. (±) | WATER LEVEL: 8'

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 4.5" Asphalt over 6" stone | |
| | | | | Fill: Dark gray fine to medium sand, and silt (moist)(loose to medium dense) | |
| | S1 | 8.6 | SM | Light brown fine to medium sand, some silt (moist)(medium dense)<br>- 1" metal pipe @ 1'-6" observed | |
| | S2 | | SM | Light brown fine to medium sand, some silt (mottled)(very moist)(medium dense) | |
| 5 | S3 | | SP | Dark red-brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (mottled)(moist)(dense)<br>- grading (wet) | 5 |
| | S4 | | SM | Dark red-brown fine to coarse sand, and clayey silt, little fine to coarse gravel (mottled)(wet)(medium dense) | |
| 10 | | | | Dark red-brown weathered sandstone | 10 |
| | | | | Test pit completed @ 12'<br>Moderate groundwater seepage encountered @ 8' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3C

MELICK-TULLY AND ASSOCIATES, P.C.
Geotechnical Engineers and Environmental Consultants

# LOG OF TEST PIT

TEST PIT NO. 4

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +101 ft. (±) | WATER LEVEL: 9'

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 16" Topsoil | |
| | S1 | | SM | Light brown fine to medium sand, some silt (mottled)(moist)(medium dense) | |
| | S2 | 10.9 | SM | Light brown fine to medium sand, little silt, trace fine gravel (mottled)(moist)(medium dense) | |
| 5 | S3 | 9.8 | SM | Dark red-brown fine to coarse sand, some silt, some fine to coarse gravel (mottled)(wet)(medium dense) | 5 |
| | S4 | 17.3 | ML | Red-brown clayey silt, some fine to coarse sand, trace fine gravel (mottled)(wet)(stiff) | |
| 10 | S5 | | SM | Light brown fine sand, some silt (mottled)(wet)(medium dense) | 10 |
| | | | | Test pit completed @ 12'<br>Moderate groundwater seepage<br>encountered @ 9'<br>Continuous cave-in below 8' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3D

MELICK-TULLY AND ASSOCIATES, P.C.
Geotechnical Engineers and Environmental Consultants

# LOG OF TEST PIT

TEST PIT NO. 5

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +104 ft. (±) | WATER LEVEL: *

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 3" Gravel over 5" topsoil | |
| | S1 | | SM | Light brown fine to medium sand, some silt (moist)(medium dense) | |
| | S2 | | SM | Light gray fine to medium sand, some silt (mottled)(moist)(medium dense) | |
| 5 | | | | | 5 |
| | S3 | | SP | Dark red-brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (mottled)(moist)(medium dense to dense)<br>- 6" PVC sewer and c/o exposed. Sewer pipe broke @ 7' (appeared abandoned) | |
| 10 | | | | | 10 |
| | | | | Test pit completed @ 10'<br><br>*Groundwater seepage not encountered | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3E

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# LOG OF TEST PIT

TEST PIT NO. 6

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +104 ft. (±) | WATER LEVEL: *

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 11" Topsoil | |
| | S1 | | SM | Gray-brown fine to medium sand, little silt, trace fine gravel (moist)(medium dense) | |
| | | | | - grading with mottling @ 2' | |
| | S2 | | | | |
| 5 | S3 | 3.1 | SP | Red-brown fine to coarse sand, trace silt, some fine gravel, with several cobbles (mottled)(moist)(dense) | 5 |
| 10 | S4 | | | - grading with boulders<br>- refusal on boulder @ 12' | 10 |
| | | | | Test pit completed @ 12'<br><br>*Groundwater seepage not encountered | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3F

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# LOG OF TEST PIT

TEST PIT NO. 7

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +108.5 ft. (±) | WATER LEVEL: *

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | S1 | 14.3 | | Fill: Very dark brown fine to medium sand, some silt with topsoil, with many roots, little gravel (moist)(loose)<br>- fill extended to 8' on east side of test pit | |
| 5 | S2 | | SP/SM | Light brown fine to medium sand, little silt (moist)(medium dense)<br>- grading with mottling @ 5' | 5 |
| | S3 | | | | |
| | S4 | | SM | Light gray fine to medium sand, little silt, some fine to coarse gravel, with cobbles (mottled)(moist)(dense) | |
| 10 | S5 | | SP | Light red-brown fine to coarse sand, trace silt, some fine to coarse gravel, with several cobbles (mottled)(moist)(dense) | 10 |
| 15 | | | | Test pit completed @ 13'<br>*Groundwater seepage not encountered | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3G

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# LOG OF TEST PIT

TEST PIT NO. 8

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +108 ft. (±) | WATER LEVEL: *

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 10" Topsoil | |
| | | | SM | Light brown fine to medium sand, some silt (moist)(medium dense) | |
| | | | SM | Light gray fine to medium sand, little silt (moist)(medium dense) | |
| 5 | | | | Test pit completed @ 4'<br>*Groundwater seepage not encountered | 5 |
| 10 | | | | | 10 |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3H

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# LOG OF TEST PIT

TEST PIT NO. 9

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +106.5 ft. (±) | WATER LEVEL: 11'

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 1" Gravel over 1" asphalt over 6" dark brown topsoil | |
| | S1 | | SM | Light brown fine to medium sand, some silt (moist)(medium dense) | |
| | S2 | | SM | Gray-brown fine to medium sand, little silt, trace fine gravel (moist)(medium dense) | |
| 5 | S3 | | SP | Red-brown fine to coarse sand, trace silt, some fine to coarse sand, with many cobbles (mottled)(moist)(dense) | 5 |
| | | | | - grading (very moist) | |
| 10 | | | | - grading (wet) | 10 |
| | | | | Dark red-brown weathered sandstone | |
| | | | | Test pit completed @ 12' | |
| | | | | Moderate groundwater seepage encountered @ 11' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3I

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# LOG OF TEST PIT

TEST PIT NO. 10

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +105 ft. (±) | WATER LEVEL: 9.5'

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 2" Asphalt | |
| | S1 | 16.4 | | Fill: Very dark gray fine to coarse sand, some silt, some fine gravel (very moist)(medium dense) | |
| | S2 | | SM | Light brown fine to medium sand, little silt (mottled)(moist)(medium dense) | |
| 5 | | | SM | Light red-brown fine to medium sand, little silt, little fine to coarse gravel (mottled)(moist)(dense) | 5 |
| | S3 | | SP | Red-brown fine to coarse sand, trace silt, some fine to coarse gravel, with several cobbles (mottled)(moist)(dense) | |
| | S4 | | | Dark red-brown weathered sandstone<br>- refusal @ 10' | |
| 10 | | | | | 10 |
| | | | | Test pit completed @ 10'<br>Light groundwater seepage encountered @ 9.5' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3J

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# LOG OF TEST PIT

TEST PIT NO. 11

COMPLETION DATE: 11/22/16 | SURFACE ELEVATION: +107 ft. (±) | WATER LEVEL: *

JOB NUMBER: 9420-001*1D | READING DATE: 11/22/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 9" Topsoil | |
| | | | SM | Light brown fine to medium sand, some silt (moist)(medium dense) | |
| | | | SM | Light gray fine to medium sand, little silt (moist)(medium dense) | |
| 5 | | | SM | Light gray fine to medium sand, little silt, little fine to coarse gravel (mottled)(moist)(medium dense to dense) | 5 |
| | | | SP/SM | Light red-brown fine to medium sand, little silt, little fine to coarse gravel (mottled)(moist)(dense) | |
| 10 | | | SP | Red-brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (mottled)(very moist)(dense)<br>- grading (wet) @ 12.5' | 10 |
| 15 | | | | Test pit completed @ 13'<br>*Groundwater seepage not encountered<br>Wet @ 12.5' | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3K

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# LOG OF TEST PIT

TEST PIT NO. 12

COMPLETION DATE: 11/28/16 | SURFACE ELEVATION: +102 ft. (±) | WATER LEVEL: 6'

JOB NUMBER: 9420-001*1D | READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | S1 | 9.7 | | Fill: Reddish brown fine to coarse sand, little silt, trace fine gravel (moist)(medium dense) | |
| | S2 | 14.8 | | Topsoil | |
| | | | SM | Brown fine to medium sand, little silt, little fine to coarse gravel (mottled)(moist)(medium dense) | |
| 5 | | | | | 5 |
| | | | SP/SM | Reddish brown fine to coarse sand, little silt, some fine to coarse gravel, with cobbles (mottled)(wet)(dense) | |
| | S3 | | | | |
| 10 | | | | | 10 |
| | | | | Test pit completed @ 10'<br><br>Moderate groundwater seepage encountered @ 6' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3L

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# LOG OF TEST PIT

TEST PIT NO. 13

COMPLETION DATE: 11/28/16 | SURFACE ELEVATION: +102.5 ft. (±) | WATER LEVEL: 9'

JOB NUMBER: 9420-001*1D | READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 12" Topsoil | |
| | S1 | | SM | Brown fine to medium sand, some silt (moist)(medium dense)<br>- grading with mottling @ 1.5' | |
| 5 | S2 | | SP | Brown fine to coarse sand, trace silt, little fine to coarse gravel, with cobbles (mottled)(wet)(dense)<br>- refusal on boulder @ 9' | 5 |
| 10 | | | | Test pit completed @ 9'<br>Moderate groundwater seepage encountered @ 9' | 10 |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3M

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# LOG OF TEST PIT

TEST PIT NO. 14

COMPLETION DATE: 11/28/16
JOB NUMBER: 9420-001*1D

SURFACE ELEVATION: +104.5 ft. (±)

WATER LEVEL: 10'
READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 2" Gravel over 3" topsoil | |
| | S1 | | SM | Yellowish brown fine sand, little silt, trace fine gravel (moist)(medium dense)<br>- grading with mottling @ 2'<br>- grading with cobbles | |
| 5 | S2 | | | | 5 |
| | S3 | | SP/SM | Reddish brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (mottled)(wet)(dense) | |
| 10 | | | | | 10 |
| | | | | Test pit completed @ 11'<br>Slight to moderate groundwater seepage encountered @ 10' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3N

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# LOG OF TEST PIT

TEST PIT NO. 15

COMPLETION DATE: 11/28/16 | SURFACE ELEVATION: +109.5 ft. (±) | WATER LEVEL: *

JOB NUMBER: 9420-001*1D | READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | S1 | | | 3" Asphalt over 6" crushed stone | |
| | S2 | | SP/SM | Yellowish brown fine to medium sand, little silt, little fine to coarse gravel (moist)(medium dense) | |
| | S3 | | SP | Reddish brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (moist)(loose) | |
| 5 | | | | | 5 |
| | | | SP | Reddish brown fine to coarse sand, trace silt, some fine to coarse gravel, with cobbles (mottled)(moist)(dense) | |
| 10 | S4 | | | | 10 |
| | | | | Test pit completed @ 12' | |
| | | | | *Groundwater seepage not encountered | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3O

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# LOG OF TEST PIT

TEST PIT NO. 16

COMPLETION DATE: 11/28/16 | SURFACE ELEVATION: +108.5 ft. (±) | WATER LEVEL: 10'

JOB NUMBER: 9420-001*1D | READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | S1 | | | 5" Crushed stone | |
| | | | | Fill: Gray fine to coarse sand, little silt, and fine to coarse gravel, with boulders and brick fragments (very moist)(loose) | |
| | S2 | 15.6 | | | |
| | | | SM | Brown fine to coarse sand, some clayey silt, little fine gravel (very moist)(loose) | |
| | S3 | 14.6 | | | |
| 5 | | | | Brown fine to coarse sand, trace silt, and fine to coarse gravel, with cobbles (moist)(dense)<br>- grading with mottling @ 5' | 5 |
| | | | SP | | |
| | S4 | | | | |
| 10 | | | | | 10 |
| | | | | Test pit completed @ 12' | |
| | | | | Light to moderate groundwater seepage encountered @ 10' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3P

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# LOG OF TEST PIT

TEST PIT NO. 17

COMPLETION DATE: 11/28/16 | SURFACE ELEVATION: +106.5 ft. (±) | WATER LEVEL: 8'

JOB NUMBER: 9420-001*1D | READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 1" Gravel over 1" asphalt | |
| | S1 | 21.5 | | Fill: Gray fine to medium sand, some silt, little fine to coarse gravel, with pieces of wood (wet)(medium dense) | |
| | | | SM | Brown fine to coarse sand, little silt, some fine to coarse gravel, with cobbles (moist)(medium dense) | |
| | | | SM | Reddish brown fine to coarse sand, little silt, some fine to coarse gravel, with cobbles (mottled)(moist)(dense) | |
| 5 | S2 | | | | 5 |
| | S3 | | ML | Reddish brown clayey silt, trace fine sand, some fine to coarse gravel, with cobbles (mottled)(wet)(very stiff) | |
| 10 | | | | | 10 |
| | | | | Test pit completed @ 11'<br>Light groundwater seepage encountered @ 8' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3Q

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# LOG OF TEST PIT

TEST PIT NO. 18

COMPLETION DATE: 11/28/16
JOB NUMBER: 9420-001*1D

SURFACE ELEVATION: +105.5 ft. (±)

WATER LEVEL: 7'
READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 3" Gravel | |
| | S1 | 17.7 | | Fill: Dark gray fine sand, some silt, trace organics (very moist)(medium dense) | |
| | S2 | 11.6 | SM | Gray fine sand, some silt (mottled)(moist)(medium dense) | |
| 5 | S3 | | ML | Reddish brown clayey silt, little fine to coarse sand, little fine to coarse gravel (mottled)(moist)(stiff) | 5 |
| | | | | - grading with cobbles (very stiff) | |
| 10 | | | | Test pit completed @ 10' | 10 |
| | | | | Light groundwater seepage encountered @ 7' | |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3R

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# LOG OF TEST PIT

TEST PIT NO. 19

COMPLETION DATE: 11/28/16
JOB NUMBER: 9420-001*1D

SURFACE ELEVATION: +103.5 ft. (±)

WATER LEVEL: *
READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | SYMBOL | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | S1 | | | Fill: Reddish brown fine to coarse sand, little silt, some fine to coarse gravel, with cobbles, glass and metal (very moist)(loose) | |
| | S2 | | ML | Reddish brown clayey silt (mottled)(very moist)(stiff)<br>- metal pipe observed @ 4' | |
| 5 | | | | Test pit completed @ 5'<br>*Groundwater seepage not encountered | 5 |
| 10 | | | | | 10 |
| 15 | | | | | 15 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 3S

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# LOG OF TEST PIT

TEST PIT NO. 101

COMPLETION DATE: 11/23/16 | SURFACE ELEVATION: +108.5 ft. (±) | WATER LEVEL: 9'

JOB NUMBER: 9420-001*1D | READING DATE: 11/23/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 4" Gravel | |
| | S1, T1 | | 4-24 | Topsoil/Fill: Dark grayish brown (10YR, 4/2) sandy loam, moderate, medium, angular blocky, moist, friable, clear wavy boundary, few fine roots | |
| | S2, T2 | 14.0 | 24-48 | Light yellowish brown (10YR, 6/2) sandy clay loam, 5% gravel, moderate medium angular blocky, moist, friable, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles throughout layer | |
| 5 | S3, T3 | | 48-66 | Brown (7.5YR, 4/4) sandy loam, 10% gravel, moderate medium angular blocky, moist, firm, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles throughout layer | 5 |
| | S4, T4 | | 66-120 | Light reddish brown (2.5YR, 6/4) sandy loam, 15% gravel, moderate medium subangular blocky, moist, firm, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles throughout layer | |
| 10 | | | T20-126 | Light reddish brown (2.5YR, 6/4) sandy clay loam, 20% gravel, 20% cobbles, moderate medium subangular blocky, wet, friable | 10 |
| | | | | Test pit completed @ 10.5' | |
| 15 | | | | Refusal on boulders | 15 |
| | | | | Moderate groundwater seepage encountered @ 9' | |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4A

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# LOG OF TEST PIT

TEST PIT NO. 102

COMPLETION DATE: 11/23/16
JOB NUMBER: 9420-001*1D

SURFACE ELEVATION: +106.5 ft. (±)

WATER LEVEL: 9'
READING DATE: 11/23/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | 4-12 | 4" Gravel<br>Dark brown (10YR, 3/3) loam, moderate, medium, angular blocky, moist, friable, clear wavy boundary, few fine roots | |
| | S1, T1 | | 12-36 | Yellowish brown (10YR, 5/4) sandy loam, 10% gravel, moderate medium subangular blocky, firm, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles encountered @ 30 inches to 36 inches | |
| | S2, T2 | | 36-72 | Reddish brown (2.5YR, 4/6) loamy sand, 20% gravel, moderate medium angular blocky, moist, friable, clear wavy boundary, few fine faint mottles encountered @ 54 inches to 72 inches | |
| 5 | | | | | 5 |
| | S3, T3 | | 72-144 | Reddish brown (2.5YR, 4/4) loam, 10% gravel, 10% cobbles, moderate medium subangular blocky, moist to wet, firm, few fine faint mottles throughout layer | |
| 10 | | | | | 10 |
| | T4 | | | Test pit completed @ 12'<br>Refusal on cobbles<br>Light groundwater seepage encountered @ 9' | |
| 15 | | | | | 15 |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4B

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# LOG OF TEST PIT

TEST PIT NO. 103

COMPLETION DATE: 11/28/16
JOB NUMBER: 9420-001*1D

SURFACE ELEVATION: +103.5 ft. (±)

WATER LEVEL: 6'
READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | 0-12 | Topsoil/Fill: Brown (10YR, 4/3) sandy loam, moderate medium angular blocky, moist, friable, clear wavy boundary, few fine roots | |
| | S1, T1 | 16.9 | 12-36 | Reddish brown (5YR, 5/4) sandy loam, 3% gravel, single grain, moist, friable to firm, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles encountered @ 20 inches to 36 inches | |
| | S2, T2 | 7.7 | 36-72 | Reddish brown (5YR, 5/4) loamy sand, 23% gravel, single grain, moist, friable, clear wavy boundary, common medium distinct gray (10YR, 6/1) mottles throughout layer | |
| 5 | | | | | 5 |
| | S3, T3 | 15.4 | 72-120 | Reddish brown (5YR, 5/4) clay loam, 4% gravel, moderate medium subangular blocky, wet, firm, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles throughout layer | |
| 10 | | | | | 10 |
| | S4, T4 | 11.6 | 120-132 | Reddish brown (5YR, 5/4) loam, 13% gravel, 10% cobbles, moderate medium subangular blocky, wet, firm, few fine faint gray (10YR, 6/1) mottles throughout layer | |
| | | | | Test pit completed @ 11' | |
| | | | | Refusal on boulders | |
| 15 | | | | Moderate groundwater seepage encountered @ 6' | 15 |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4C

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# LOG OF TEST PIT

TEST PIT NO. 104

COMPLETION DATE: 11/28/16 | SURFACE ELEVATION: +105 ft. (±) | WATER LEVEL: 10'

JOB NUMBER: 9420-001*1D | READING DATE: 11/28/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 3" Asphalt | |
| | S1, T1 | | 3-15 | Brown (10YR, 5/3) loam, moderate medium subangular blocky, moist, friable, clear wavy boundary | |
| | S2, T2 | | 15-36 | Yellowish brown (10YR, 5/6) loamy sand, single grain, moist, loose, clear wavy boundary | |
| | S3, T3 | | 36-60 | Yellowish brown (10YR, 5/4) loamy sand, 10% gravel, 5% cobbles, single grain, moist, loose, clear wavy boundary, common medium distinct gray (10YR, 6/1) mottles throughout layer | |
| 5 | | | | | 5 |
| | S4, T4 | | 60-144 | Brown (7.5YR, 4/4) sand, 10% gravel, 10% cobbles, single grain, moist, loose, common medium distinct gray (10YR, 6/1) mottles throughout layer | |
| 10 | T5 | | | | 10 |
| | | | | Test pit completed @ 12' | |
| | | | | Moderate groundwater seepage encountered @ 10' | |
| 15 | | | | | 15 |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4D

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# LOG OF TEST PIT

TEST PIT NO. 105

COMPLETION DATE: 11/23/16 | SURFACE ELEVATION: +105 ft. (±) | WATER LEVEL: 11'

JOB NUMBER: 9420-001*1D | READING DATE: 11/23/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | | 3" Asphalt | |
| | | | 3-24 | Fill: Brown (10YR, 5/3) sandy loam, moderate, medium angular blocky, moist, friable, clear wavy boundary | |
| | S1, T1 | | 24-36 | Yellowish brown (10YR, 5/6) sandy loam, moderate medium subangular blocky, moist, friable, clear wavy boundary | |
| | S2, T2 | | 36-60 | Yellowish brown (10YR, 5/6) sand, single grain, moist, loose, clear wavy boundary | |
| 5 | | | | | 5 |
| | | | 60-144 | Brown (7.5Y, 5/3) sand, 10% gravel, 10% cobbles, single grain, moist, loose, few fine faint gray (10YR, 6/1) mottles throughout layer | |
| | S3, T3 | | | | |
| 10 | S4, T4 | | | | 10 |
| | | | | Test pit completed @ 12' | |
| | | | | Light groundwater seepage encountered @ 11' | |
| 15 | | | | | 15 |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4E

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# LOG OF TEST PIT

TEST PIT NO. 106

COMPLETION DATE: 11/23/16 | SURFACE ELEVATION: +106.5 ft. (±) | WATER LEVEL: 11'

JOB NUMBER: 9420-001*1D | READING DATE: 11/23/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | S1, T1 | | 0-8 | Topsoil: Brown (10YR, 4/3) sandy loam, moderate medium angular blocky, moist, friable, abrupt smooth boundary, few fine roots | |
| | | | 8-36 | Light yellowish brown (10YR, 6/4) loamy sand, single grain, moist, loose, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles encountered @ 24 inches to 36 inches | |
| | S2, T2 | | 36-96 | Light yellowish brown (10YR, 6/4) loamy sand, single grain, moist, loose, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles throughout layer | |
| 5 | | | | | 5 |
| | S3, T3 | | 96-144 | Light brown (7.5YR, 6/7) sand, 10% gravel, 10% cobbles, single grain, moist, loose, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles encountered @ 96 inches to 108 inches | |
| 10 | T4 | | | | 10 |
| | | | | Test pit completed @ 12' | |
| | | | | Moderate groundwater seepage encountered @ 11' | |
| 15 | | | | | 15 |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4F

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# LOG OF TEST PIT

TEST PIT NO. 107

COMPLETION DATE: 11/23/16
JOB NUMBER: 9420-001*1D

SURFACE ELEVATION: +105 ft. (±)

WATER LEVEL: 11'
READING DATE: 11/23/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | S1, T1 | | 0-12 | Topsoil: Yellowish brown (10YR, 5/4) sandy loam, moderate medium angular blocky, moist, friable, abrupt smooth boundary, few fine roots | |
| | | | 12-32 | Yellowish brown (10YR, 5/6) loamy sand, single grain, moist, loose, clear wavy boundary | |
| | S2, T2 | | 32-80 | Yellowish brown (10YR, 5/6) loamy sand, moderate medium subangular blocky, moist, friable, clear wavy boundary, common medium distinct gray (10YR, 6/1) mottles throughout layer | |
| 5 | | | | | 5 |
| | T3 | | 80-144 | Brown (7.5YR, 5/4) sand, 20% gravel, single grain, moist, friable to firm, few fine faint gray (10YR, 6/1) mottles throughout layer | |
| | S3 | | | | |
| 10 | | | | | 10 |
| | T4 | | | | |
| | | | | Test pit completed @ 12' | |
| | | | | Moderate groundwater seepage encountered @ 11' | |
| 15 | | | | | 15 |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4G

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# LOG OF TEST PIT

TEST PIT NO. 108

COMPLETION DATE: 11/23/16
JOB NUMBER: 9420-001*1D

SURFACE ELEVATION: +105.5 ft. (±)

WATER LEVEL: 11'
READING DATE: 11/23/16

| DEPTH | SAMPLES (1) | MOISTURE CONTENT (%) | DEPTH (INCHES) | DESCRIPTION | DEPTH |
|---|---|---|---|---|---|
| | | | 0-12 | Topsoil: Dark brown (10YR, 3/3) sandy loam, moderate medium angular blocky, moist, friable, abrupt smooth boundary, few fine roots | |
| | S1, T1 | 9.1 | 12-96 | Yellowish brown (10YR, 5/6) loamy sand, moderate medium subangular blocky, moist, friable, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles encountered @ 44 inches to 66 inches | |
| | S2, T2 | 5.1 | | | |
| 5 | | | | - grading to sand, friable to firm | 5 |
| | | | 96-144 | Brown (7.5YR, 5/3) loamy sand, 11% gravel, 10 cobbles, moderate medium angular blocky, moist to wet, friable to firm, few fine faint gray (10YR, 6/1) mottles encountered @ 96 inches to 144 inches | |
| 10 | S3, T3 | 6.8 | | | 10 |
| | | | | Test pit completed @ 12' | |
| | | | | Light groundwater seepage encountered @ 11' | |
| 15 | | | | | 15 |
| 20 | | | | | 20 |

NOTES FOR COLUMNS:
1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS
TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 12/16

Sheet: 1 of 1 PLATE: 4H

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| MAJOR DIVISIONS | | | LETTER SYMBOL | TYPICAL DESCRIPTIONS |
|---|---|---|---|---|
| COARSE GRAINED SOILS<br>More than 50% of material is LARGER than No. 200 Sieve | GRAVEL & GRAVELLY SOILS<br>More than 50% of coarse fraction RETAINED on No. 4 Sieve | CLEAN GRAVELS<br>(Little or no fines) | GW | Well-graded gravels, gravel-sand mixtures, little or no fines. |
| | | | GP | Poorly-graded gravels, gravel-sand mixtures, little or no fines |
| | | GRAVELS WITH FINES<br>(Appreciable amount of fines) | GM | Silty gravels, gravel-sand-silt mixtures. |
| | | | GC | Clayey gravels, gravel-sand-clay mixtures. |
| | SAND AND SANDY SOILS<br>More than 50% of coarse fraction PASSING a No. 4 Sieve | CLEAN SAND<br>(Little or no fines) | SW | Well-graded sands, gravelly sands, little or no fines. |
| | | | SP | Poorly-graded sands, gravelly sands, little or no fines. |
| | | SANDS WITH FINES<br>(Appreciable amount of fines) | SM | Silty sands, sand-silt mixtures |
| | | | SC | Clayey sands, sand-clay mixtures. |
| FINE GRAINED SOILS<br>More than 50% of material is SMALLER than No. 200 Sieve. | SILTS AND CLAYS | Liquid limit LESS than 50 | ML | Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity. |
| | | | CL | Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays. |
| | | | OL | Organic silts and organic silty clays of low plasticity. |
| | SILTS AND CLAYS | Liquid limit GREATER than 50 | MH | Inorganic silts, micaceous or diatomaceous fine sand or silty soils. |
| | | | CH | Inorganic clays of high plasticity, fat clays. |
| | | | OH | Organic clays of medium to high plasticity, organic silts. |
| HIGHLY ORGANIC SOILS | | | PT | Peat, humus, swamp soils with high organic contents |

*NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.*

| GRADATION* | | COMPACTNESS* sand and/or gravel | | CONSISTENCY* clay and/or silt | |
|---|---|---|---|---|---|
| % Finer by Weight | | Relative Density | | Range of Shearing Strength in Pounds per Square Foot | |
| Trace | 0% to 10% | Loose | 0% to 40% | Very Soft | less than 250 |
| Little | 10% to 20% | Medium Dense | 40% to 70% | Soft | 250 to 500 |
| Some | 20% to 35% | Dense | 70% to 90% | Medium | 500 to 1000 |
| And | 35% to 50% | Very Dense | 90% to 100% | Stiff | 1000 to 2000 |
| | | | | Very Stiff | 2000 to 4000 |
| | | | | Hard | Greater than 4000 |

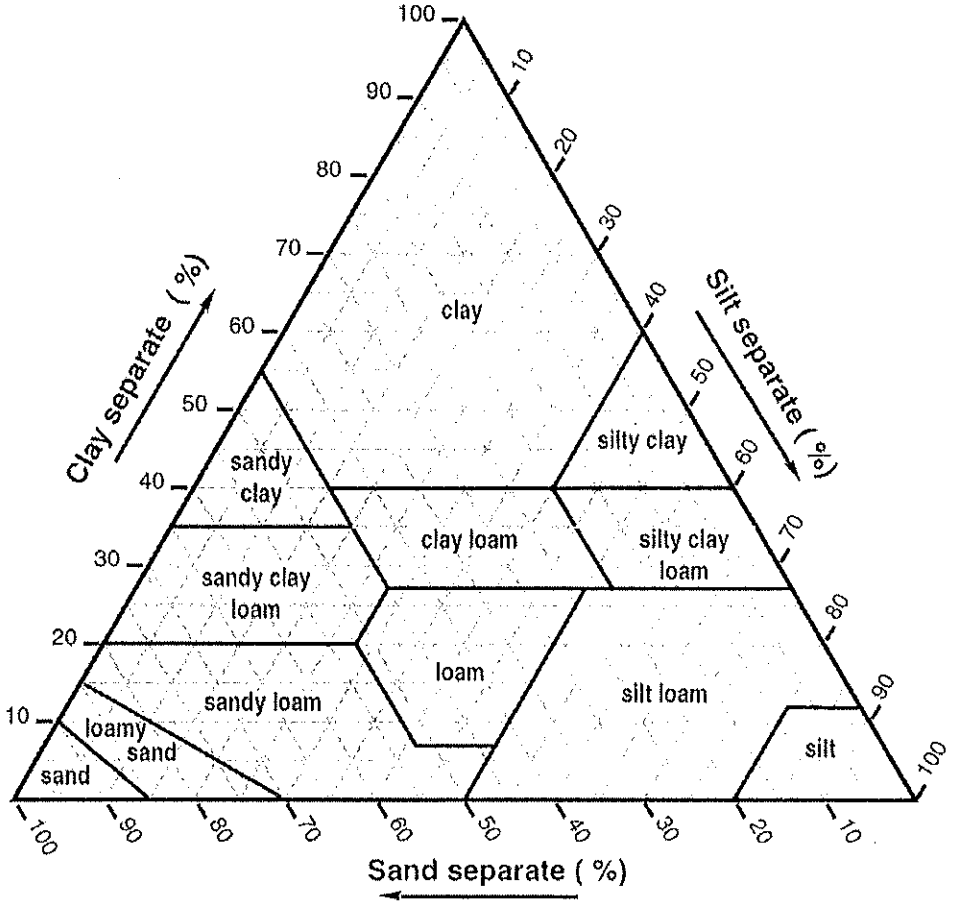
**Values are from laboratory or field test data, where applicable. When no testing was performed, values are estimated.*

# UNIFIED SOIL CLASSIFICATION SYSTEM

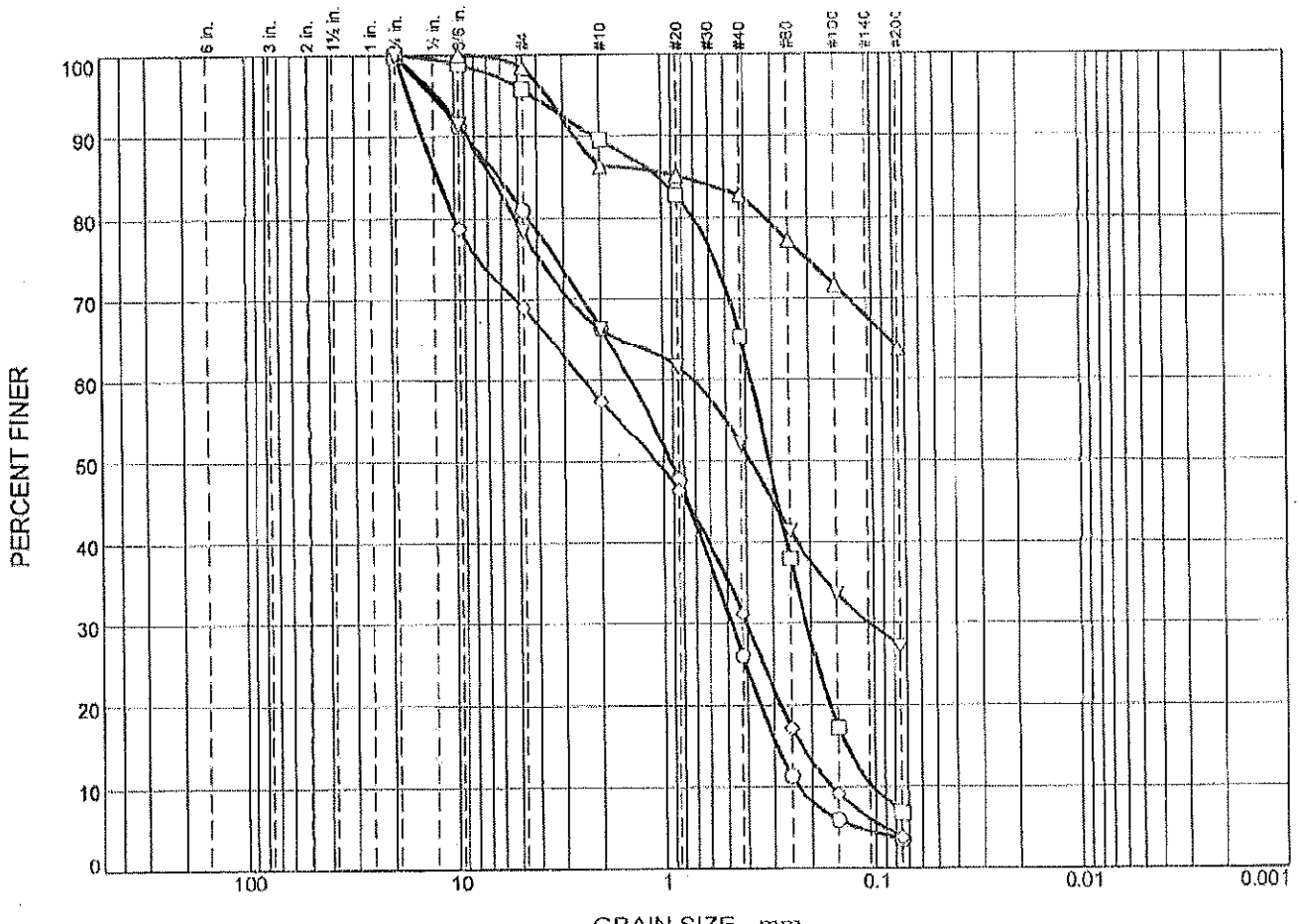
## SOIL CLASSIFICATION CHART

# Texture Triangle:

Fine Earth Texture Classes ( ——— )



# Gradation Curve(s)




| | % +3" | % Gravel | | % Sand | | | % Fines |
|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | |
| ○ | 0.0 | 0.0 | 19.0 | 14.6 | 40.4 | 22.5 | 3.5 |
| □ | 0.0 | 0.0 | 4.2 | 6.2 | 24.2 | 58.6 | 6.8 |
| △ | 0.0 | 0.0 | 1.5 | 12.1 | 3.6 | 19.0 | 63.8 |
| ◇ | 0.0 | 0.0 | 31.0 | 11.6 | 26.2 | 27.5 | 3.7 |
| ▽ | 0.0 | 0.0 | 21.6 | 12.1 | 14.2 | 24.9 | 27.2 |

## SOIL DATA

| SYMBOL | SOURCE | SAMPLE NO. | DEPTH (ft.) | Material Description | USCS |
|---|---|---|---|---|---|
| ○ | TP-1 | S-1 | 2.5 | Fine to coarse Sand, little fine Gravel, trace Silt. (MC=5.9%) | SP |
| □ | TP-4 | S-2 | 3.5 | Fine to medium Sand, little Silt, trace fine Gravel. (MC=10.9%) | SP-SM |
| △ | TP-4 | S-4 | 7.0 | Clayey Silt, some f-c Sand, trace fine Gravel. (MC=17.3%) | ML |
| ◇ | TP-6 | S-3 | 5.5 | Fine to coarse Sand, some fine Gravel, trace Silt. (MC=3.1%) | SP |
| ▽ | TP-10 | S-1 | 1.0 | Fine to coarse Sand, some Silt, some fine Gravel. (MC=16.4%) | Fill |

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South Bound Brook, NJ

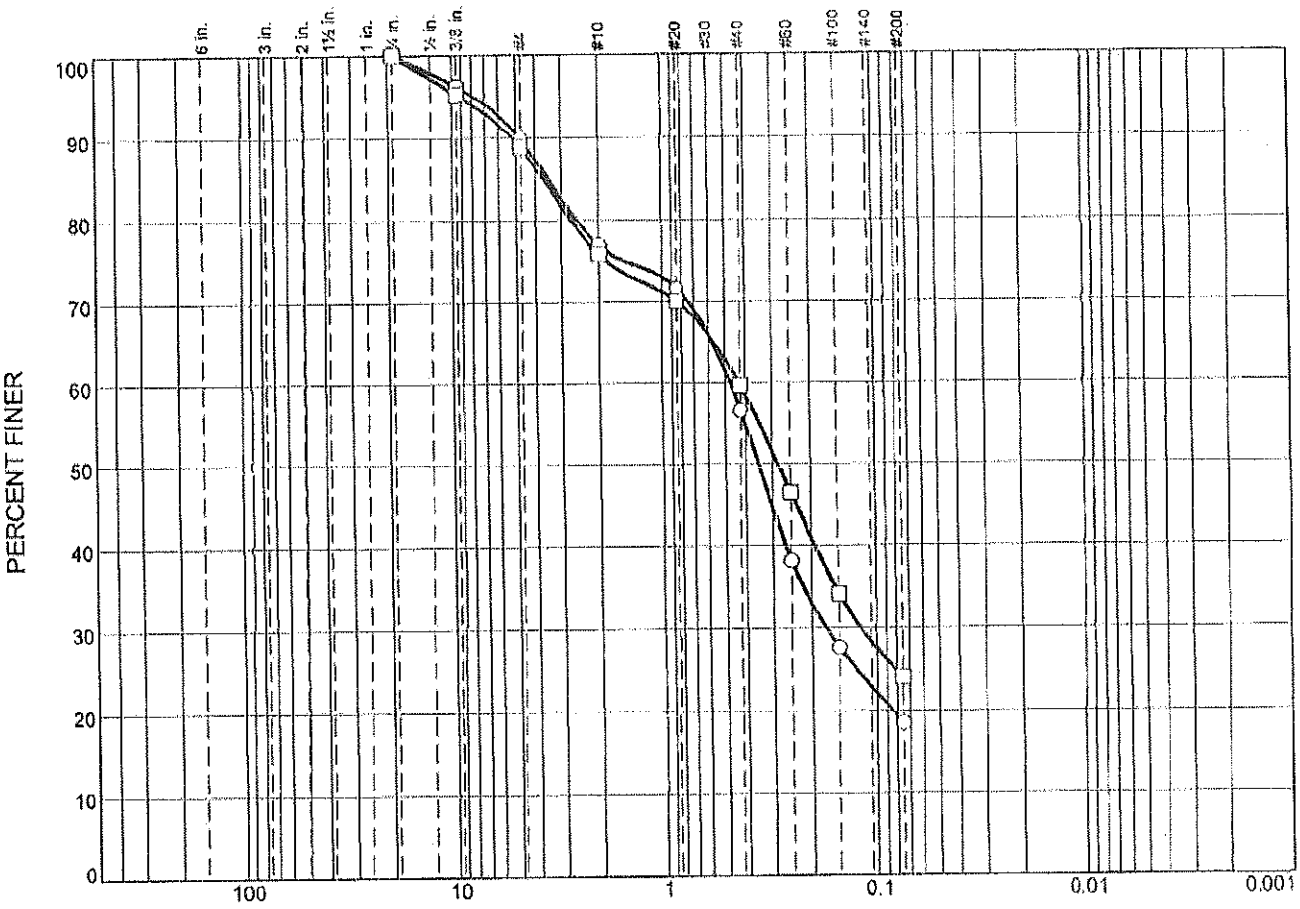
**Client:** Coremark Group LLC

**Project:** Proposed D'Angelo Redevelopment, Dumont,NJ

Project No.: 9420-001

Plate 7A

# Gradation Curve(s)




| | % +3" | % Gravel | | % Sand | | | % Fines |
|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | |
| ○ | 0.0 | 0.0 | 10.0 | 13.0 | 20.4 | 38.1 | 18.5 |
| □ | 0.0 | 0.0 | 11.1 | 13.1 | 16.1 | 35.7 | 24.0 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

## SOIL DATA

| SYMBOL | SOURCE | SAMPLE NO. | DEPTH (ft.) | Material Description | USCS |
|---|---|---|---|---|---|
| ○ | TP-12 | S-1 | 1.0 | Fine to coarse Sand, little Silt, trace fine Gravel. (MC=9.7%) | Fill |
| □ | TP-16 | S-3 | 4 | F-c Sand, some Clayey Silt, little fine Gravel. (MC=14.6%) | SM |
| | | | | | |
| | | | | | |
| | | | | | |

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**South Bound Brook, NJ**

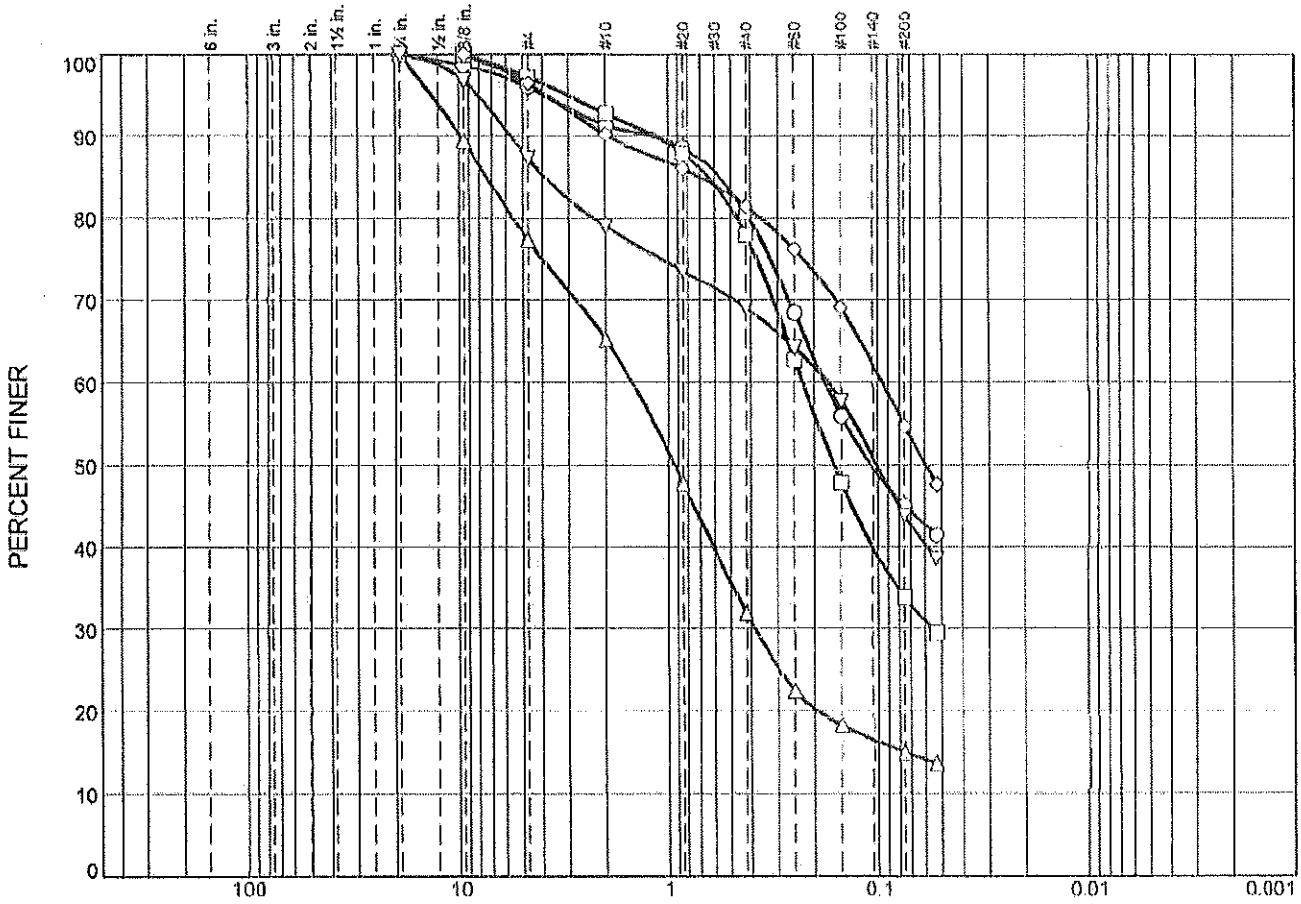
**Client:** Coremark Group LLC

**Project:** Proposed D'Angelo Redevelopment, Dumont,NJ

Project No.: 9420-001

Plate 7B

# Gradation Curve(s)




| | % +3" | % Gravel | | % Sand | | | % Fines |
|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | |
| ○ | 0.0 | 0.0 | 3.9 | 4.7 | 10.7 | 35.7 | 45.0 |
| □ | 0.0 | 0.0 | 2.6 | 4.5 | 14.9 | 44.2 | 33.8 |
| △ | 0.0 | 0.0 | 22.7 | 12.1 | 33.3 | 17.0 | 14.9 |
| ◇ | 0.0 | 0.0 | 3.5 | 6.3 | 8.7 | 26.8 | 54.7 |
| ▽ | 0.0 | 0.0 | 12.6 | 8.4 | 9.9 | 25.3 | 43.8 |

## SOIL DATA

| SYMBOL | SOURCE | SAMPLE NO. | DEPTH (ft.) | Material Description | USCS |
|---|---|---|---|---|---|
| ○ | TP-101 | S-2 | 3 | Sandy Clay Loam. (MC=14.0%) | SM |
| □ | TP-103 | S-1 | 2 | Sandy Loam. (MC=16.9%) | SM |
| △ | TP-103 | S-2 | 4 | Gravelly Loamy Sand. (MC=7.7%) | SM |
| ◇ | TP-103 | S-3 | 8 | Clay Loam. (MC=15.4%) | ML |
| ▽ | TP-103 | S-4 | 11 | Loam. (MC=11.6%) | SM |

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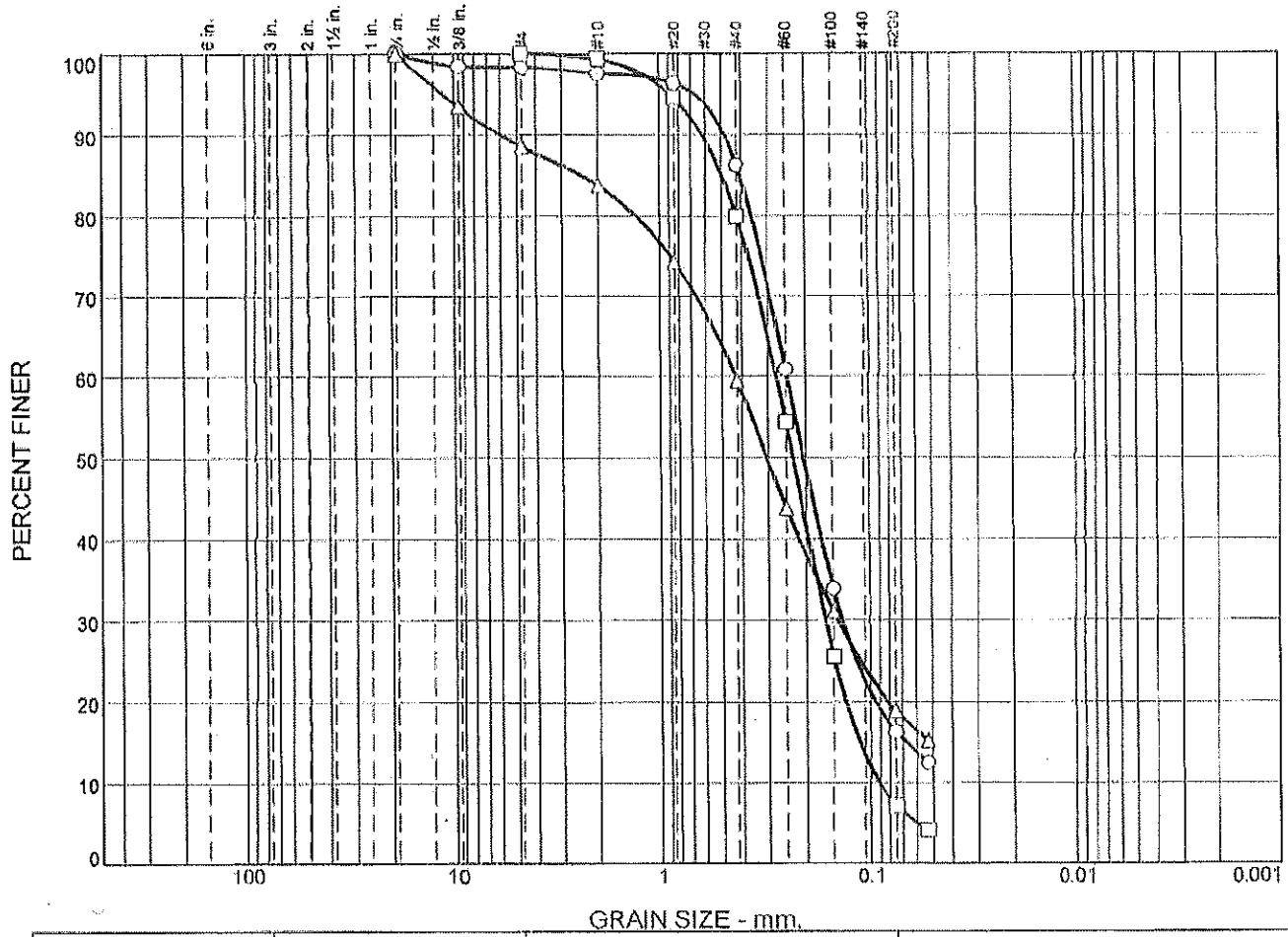
**Project:** Proposed D'Angelo Redevelopment, Dumont,NJ

**Project No.:** 9420-001 **Plate** 7C

# Gradation Curve(s)




| | % +3" | % Gravel | | % Sand | | | % Fines |
|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | |
| ○ | 0.0 | 0.0 | 1.6 | 0.8 | 11.2 | 70.1 | 16.3 |
| □ | 0.0 | 0.0 | 0.0 | 0.6 | 19.4 | 72.9 | 7.1 |
| △ | 0.0 | 0.0 | 11.3 | 4.9 | 24.3 | 40.7 | 18.8 |
| | | | | | | | |
| | | | | | | | |

## SOIL DATA

| SYMBOL | SOURCE | SAMPLE NO. | DEPTH (ft.) | Material Description | USCS |
|---|---|---|---|---|---|
| ○ | TP-108 | S-1 | 1.5 | Loamy Sand. (MC=9.1%) | SM |
| □ | TP-108 | S-2 | 4 | Sand. (MC=5.1%) | SP-SM |
| △ | TP-108 | S-3 | 11 | Loamy Sand. (MC=6.8%) | SM |
| | | | | | |
| | | | | | |

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South Bound Brook, NJ

**Client:** Coremark Group LLC

**Project:** Proposed D'Angelo Redevelopment, Dumont,NJ

Project No.: 9420-001

Plate 7D

Summary of Soil Mottling, Groundwater Seepage and Permeability Rates

| Test Pit Number | Ground Surface Elevation | Depth to Soil Mottling (feet) | Soil Mottling Elevation (feet) | Depth to Groundwater Seepage (feet) | Groundwater Seepage Elevation (feet) |
|---|---|---|---|---|---|
| 101 | 108.5 | 2.0 | 106.5 | 9.0 | 99.5 |
| 102 | 106.5 | 2.5 | 104.0 | 9.0 | 97.5 |
| 103 | 103.5 | 1.7 | 101.8 | 6.0 | 97.5 |
| 104 | 105.0 | 3.0 | 102.0 | 10.0 | 95.0 |
| 105 | 105.0 | 5.0 | 100.0 | 11.0 | 94.0 |
| 106 | 106.5 | 2.0 | 104.5 | 11.0 | 95.5 |
| 107 | 105.0 | 2.7 | 102.3 | 11.0 | 94.0 |
| 108 | 105.5 | 3.7 | 101.8 | 11.0 | 94.5 |

*Table 1: Summary of Soil Mottling and Groundwater Seepage Levels in Test Pits 101 through 108*

| Test Pit Number | Depth of Test (feet) | Soil Type | Field Percolation Rate (minutes/inch) | Permeability Rate (inches/hour) |
|---|---|---|---|---|
| 107 | 4.0 | Loamy Sand | 2.0 | 11.0 |

*Table 2: Summary of Field Percolation Test Result*

Summary of Soil Mottling, Groundwater Seepage and Permeability Rates

| Test Pit Number | Depth of Tube Sample (feet) | Soil Type | Permeability Rate (Sample A) (inches/hour) | Permeability Rate (Sample B) (inches/hour) |
|---|---|---|---|---|
| 101 | 1.0 | Sandy Loam (Topsoil/Fill) | <0.2 | <0.2 |
| 101 | 3.0 | Sandy Clay Loam | <0.2 | <0.2 |
| 101 | 5.0 | Sandy Loam | 0.7 | 0.4 |
| 101 | 7.0 | Sandy Loam | <0.2 | <0.2 |
| 102 | 2.0 | Sandy Loam | <0.2 | <0.2 |
| 102 | 4.0 | Loamy Sand | 12.9 | 13.3 |
| 102 | 7.0 | Loam | <0.2 | <0.2 |
| 102 | 12.0 | Loam | <0.2 | <0.2 |
| 103 | 2.0 | Sandy Loam | 2.3 | 1.4 |
| 103 | 4.0 | Loamy Sand | 8.0 | 7.3 |
| 103 | 8.0 | Clay Loam | <0.2 | <0.2 |
| 103 | 11.0 | Loam | <0.2 | <0.2 |
| 104 | 1.0 | Loam | 0.7 | <0.2 |
| 104 | 2.0 | Loamy Sand | 4.9 | 3.2 |
| 104 | 4.0 | Loamy Sand | 6.0 | 4.5 |
| 104 | 8.0 | Sand | 10.5 | 14.8 |
| 104 | 11.0 | Sand | 14.5 | >20 |
| 105 | 2.5 | Sandy Loam | 1.1 | 0.9 |
| 105 | 4.5 | Sand | 12.5 | 12.0 |
| 105 | 9.0 | Sand | 8.6 | 9.8 |
| 105 | 11.0 | Sand | 11.2 | 12.4 |
| 106 | 1.0 | Loamy Sand | 7.4 | 8.5 |
| 106 | 4.0 | Loamy Sand | 6.9 | 7.1 |
| 106 | 9.0 | Sand | 8.5 | 8.9 |
| 106 | 11.0 | Sand | >20 | >20 |
| 107 | 1.5 | Loamy Sand | 5.6 | 5.5 |
| 107 | 4.0 | Loamy Sand | 4.2 | 5.1 |
| 107 | 7.0 | Sand | 3.3 | 4.3 |
| 107 | 12.0 | Sand | 4.1 | 1.8 |
| 108 | 1.5 | Loamy Sand | 4.0 | 4.4 |
| 108 | 4.0 | Sand | 4.6 | 4.6 |
| 108 | 11.0 | Loamy Sand | 1.4 | 3.4 |

*Table 3: Summary of Laboratory Tube Permeameter Permeability Tests*

# APPENDIX

## APPENDIX

## Limitations

### A. Subsurface Information

Locations: The locations of the explorations were approximately determined by tape measurement from existing site features. Elevations of the explorations were approximately determined by interpolation between contours shown on topographic plans provided to us by the site engineer. The locations and elevations of the explorations should be considered accurate only to the degree implied by the method used.

Interface of Strata: The stratification lines shown on the individual logs of the subsurface explorations represent the approximate boundaries between soil types, and the transitions may be gradual.

Field Logs/Final Logs: A field log was prepared for each exploration by a member of our staff. The field log contains factual information and interpretation of the soil conditions between samples. Our recommendations are based on the final logs as shown in this report and the information contained therein, and not on the field logs. The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and/or tests of the field samples.

Water Levels: Water level readings have been made in the explorations at times and under conditions stated on the individual logs. These data have been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater will occur due to variations in rainfall, temperature, and other factors.

Pollution/Contamination: Unless specifically indicated to the contrary in this report, the scope of our services was limited only to investigation and evaluation of the geotechnical engineering aspects of the site conditions, and did not include any consideration of potential site pollution or contamination resulting from the presence of chemicals, metals, radioactive elements, etc. This report offers no facts or opinions related to potential pollution/contamination of the site.

Environmental Considerations: Unless specifically indicated to the contrary in this report, this report does not address environmental considerations which may affect the site development, e.g., wetlands determinations, flora and fauna, wildlife, etc. The conclusions and recommendations of this report are not intended to supersede any environmental conditions which should be reflected in the site planning.

## B. Applicability of Report

This report has been prepared in accordance with generally accepted soils and foundation engineering practices for the exclusive use of Coremark Group for specific application to the design of the proposed D'Angelo Redevelopment. No other warranty, expressed or implied, is made.

This report may be referred to in the project specifications for general information purposes only, but should not be used as the technical specifications for the work, as it was prepared for design purposes exclusively.

## C. Reinterpretation of Recommendations

Change in Location or Nature of Facilities: In the event that any changes in the nature, design or location of the buildings are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

Changed Conditions During Construction: The analyses and recommendations submitted in this report are based in part upon the data obtained from 27 widely-spaced test pit excavations performed for this study. The nature and extent of variations between the explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

Changes in State-of-the-Art: The conclusions and recommendations contained in this report are based upon the applicable standards of our profession at the time this report was prepared.

## D. Use of Report by Prospective Bidders

This soil and foundation engineering report was prepared for the project by Melick-Tully and Associates, P.C. for design purposes and may not be sufficient to prepare an accurate bid. Contractors utilizing the information in the report should do so with the express understanding that its scope was developed to address design considerations. Prospective bidders should obtain the owner's permission to perform whatever additional explorations or data gathering they deem necessary to prepare their bid accurately.

## E. Construction Observation

We recommend that Melick-Tully and Associates, P.C. be retained to provide on-site soils engineering services during the earthwork construction and foundation phases of the work. This is to observe compliance with the design concepts and to allow changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.